

REMARKS

1. Restriction

Restriction has been required to one of two identified groups of claims:

- I. Claims 1 – 6; and
- II. Claims 7 – 9.

Applicants affirm the election of Group I with traverse.

2. Claims

Claims 1 – 6 have been examined. Claims 1 and 3 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Pat. No. 6,408,038 (“Takeuchi”) in view of U.S. Pat. No. 5,796,814 (“Brajal”) and U.S. Pat. No. 6,493,395 (“Isaksson”); and Claims 2 and 4 – 6 have been identified as allowable except for their dependence on a rejected base claim. The claim rejections are respectfully traversed.

Establishment of a *prima facie* case under §103(a) requires a demonstration that all limitations are taught or suggested by the cited art and that there is some motivation to modify or combine the reference teachings as proposed. In this instance, at least some of the limitations of independent Claim 1 are not disclosed by the cited art.

The claims are directed to an OFDM receiver that extracts an output data signal from a received signal. The output data signal in this case is in the frequency domain. The receiver includes an adaptive equalizer, having tap coefficients that can be adapted to optimize the signal reception.

First, the Office Action's characterization of Takeuchi in the paragraph beginning at the bottom of page 6 argues that Takeuchi shows an equalizer "having at least a feedback section and having a plurality of tap coefficients." Later, in the first full paragraph on page 5 of the Office Action, it is accepted that Takeuchi "is silent about the equalizer having at least a feedback section and having a plurality of tap coefficients." Applicants believe that the Office Action is correct at the second of these points, and that Takeuchi does not disclose this limitation.

Regarding Brajal, the Office Action argues that this shows "an inverse Fast Fourier Transform processor for acting on the output data signal to form an estimate of the transmitted sequence," but Applicants respectfully disagree. Brajal is primarily concerned with a system comprising means for updating the weight factors of an equalizer (Brajal, Col. 1, ll. 7 – 16), and the inverse Fast Fourier Transform processor 38 (shown in Fig. 7 of Brajal) acts on the inverse of the estimate (in the frequency domain) of the channel (*see id.*, Col. 6, ll. 20 – 30, blocks 130 and 140 in Fig. 5, and Col. 10, ll. 15 – 17). It is thus believed that it is clear that Brajal does not disclose an inverse Fast Fourier Transform processor connected so that it acts on the output data signal, and that Brajal consequently cannot properly be used to argue that this limitation of Claim 1 is obvious.

Regarding Isaksson, the Office Action argues that this shows "a decision-directed equalizer having a feedback stage and a feedforward stage where the estimate of the transmitted [signal] is fed back to the equalizer to enable decision-directed adaptation of the tap coefficients, and further as an input to the feedback section of the equalizer," but Applicants respectfully disagree. In support of this argument, the Office Action refers to Fig. 18 of Isaksson and the passage at Col. 17, ll. 18 – 53 (the first cited passage lying within this second cited passage). However, Applicants believe that it is clear that these references do not support the Office Action's contention. The equalizer is shown clearly in Fig. 18 of Isaksson and the inputs to it are the Frequency-Domain Input Data and "EQ," the output of the Equalization Parameter Updating Algorithm. Col. 17 at about line 50 states that "EQ" are the equalizer parameters.

It could conceivably be argued that the Equalization Parameter Updating Algorithm should be regarded as part of the equalizer. However, even on that interpretation, it

still appears not to be the case that “the estimate of the transmitted signal is fed back to the equalizer to enable decision directed adaptation of the tap coefficients.” In any event, and even on this interpretation, it is clear that there is absolutely no disclosure in Isaksson that “the estimate of the transmitted signal is fed back ... as an input to the feedback section of the equalizer.”


It is accordingly believed that the citations of Brajal and Isaksson do not make up for the deficiencies in the teaching of Takeuchi, and hence that these documents do not disclose all of the limitations of independent Claim 1, even if they are combined. Claim 3 is additionally believed to be patentable by virtue of its dependence from Claim 1.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,


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